

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of claims:

1-33. (canceled)

34. (currently amended) An expression cassette comprising at least one polynucleotide selected from the group consisting of:

A) a polynucleotide comprising a cardiac ~~muscle-specific~~ tissue-specific promoter operatively linked to a polynucleotide comprising a polynucleotide encoding extracellular and transmembrane domains of a receptor expressed by a B or a T cell, and at least one internal ribosome entry site (IRES) operatively linked to at least one polynucleotide encoding an angiogenesis factor;

B) a polynucleotide comprising ~~an enhancer operative in a mammalian embryonic stem (ES) cell, primordial cell or bone marrow stromal cell~~ a constitutive enhancer operatively linked to a cardiac ~~muscle-specific~~ tissue-specific promoter to obtain a promoter-enhancer, said promoter-enhancer being operatively linked to a polynucleotide comprising a polynucleotide encoding extracellular and transmembrane domains of a receptor expressed by

a B or a T cell, and at least one IRES operatively linked to at least one polynucleotide encoding an angiogenesis factor;

C) a polynucleotide comprising ~~an enhancer operative in a mammalian ES cell, primordial cell or bone marrow stromal cell~~ a constitutive enhancer operatively linked to a cardiac ~~muscle-specific~~ tissue-specific promoter to obtain a promoter-enhancer, said promoter-enhancer being operatively linked to a polynucleotide comprising i) a polynucleotide encoding extracellular and transmembrane domains of a receptor expressed by a B or a T cell, and at least one IRES operatively linked to at least one polynucleotide encoding an angiogenesis factor, and ii) a promoter ~~constitutively~~ operative in a mammalian ES cell, primordial cell or bone marrow stromal cell operatively linked to a polynucleotide encoding a secreted immunosuppressive protein;

D) a polynucleotide comprising ~~an enhancer operative in a mammalian ES cell, primordial cell or bone marrow stromal cell~~ a constitutive enhancer operatively linked to a cardiac ~~muscle-specific~~ tissue-specific promoter to obtain a promoter-enhancer, said promoter-enhancer being operatively linked to a polynucleotide comprising i) a polynucleotide encoding extracellular and transmembrane domains of a receptor expressed by a B or a T cell, and at least one IRES operatively linked to at least one polynucleotide encoding an angiogenesis factor, ii) a polynucleotide comprising a promoter ~~constitutively~~ operative in a

mammalian ES cell, primordial cell or bone marrow stromal cell operatively linked to a polynucleotide encoding a protein that provides a selectable or screenable marker gene ~~that is~~said operatively linked polynucleotides (ii) being flanked by a pair of LoxP sequences, and iii) a polynucleotide encoding a secreted immunosuppressive protein;

E) a polynucleotide comprising

I) ~~an enhancer operative in a mammalian ES cell, primordial cell or bone marrow stromal cell~~ a constitutive enhancer operatively linked to a cardiac ~~muscle specific~~ tissue-specific promoter to obtain a promoter-enhancer, said promoter-enhancer being operatively linked to a polynucleotide comprising i) a polynucleotide encoding extracellular and transmembrane domains of a receptor expressed by a B or a T cell, at least one IRES operatively linked to at least one polynucleotide encoding an angiogenesis factor, ii) a polynucleotide comprising a promoter ~~constitutively~~ operative in a mammalian ES cell, primordial cell or bone marrow stromal cell operatively linked to a polynucleotide encoding a protein that provides a selectable or screenable marker ~~that is~~said operatively linked polynucleotides (ii) being flanked by a pair of LoxP sequences;

and II) a promoter ~~constitutively~~ operative in a mammalian ES cell, primordial cell or bone marrow stromal cell operatively

linked to a polynucleotide encoding a secreted immunosuppressive protein.

35. (previously presented) The expression cassette of claim 34 in which the enhancer is a cytomegalovirus (CMV) enhancer.

36. (currently amended) The expression cassette of claim 34, in which the promoter ~~constitutively~~ operative in a mammalian ES cell, primordial cell or bone marrow stromal cell is a phosphoglycerate kinase (PGK) promoter.

37. (currently amended) The expression cassette of claim 35, in which the promoter ~~constitutively~~ operative in a mammalian ES cell, primordial cell or bone marrow stromal cell is a PGK promoter.

38. (previously presented) The expression cassette of claim 34, in which the angiogenesis factor is selected from the group consisting of vascular endothelial growth factor, basic fibroblast growth factor, acidic fibroblast growth factor, angiopoietin, acitivin and follistatin.

39. (previously presented) The expression cassette of claim 34, in which the receptor expressed by a B or a T cell is selected from the group consisting of CD2 to CD10, CD11a, CD11b, CD14, CD15s,

CD16, CD17, CD18 to CD21, CD25, CD27 to CD32, CD38 to CD40, CD41A, CD41b, CD44, CD45, CD45RA, CD47, CD49b, d, e and f, CD56, CD58, CD59, CD61, CD63, CD64, CD69, CD74, CD78, CD79b, CD80, CD81, CD83, CD86, CD87, CD89, CD90, CD92, CD93, CD95, CD97, CD98, CD100, CD101, CD122, CD128, CD130, CD132, CD134, CD137, CD152, CD154, CD158a, CD161 to CD163, CD165, ICAM-1, LFA-1, LFA-3, CTLA-4, B7, hB7-PR1, BSL2vc, BSL3, ICOS, PD-1, and HLA antigens.

40. (previously presented) The expression cassette of claim 35, in which the receptor expressed by a B or a T cell is selected from the group consisting of CD2 to CD10, CD11a, CD11b, CD14, CD15s, CD16, CD17, CD18 to CD21, CD25, CD27 to CD32, CD38 to CD40, CD41A, CD41b, CD44, CD45, CD45RA, CD47, CD49b, d, e and f, CD56, CD58, CD59, CD61, CD63, CD64, CD69, CD74, CD78, CD79b, CD80, CD81, CD83, CD86, CD87, CD89, CD90, CD92, CD93, CD95, CD97, CD98, CD100, CD101, CD122, CD128, CD130, CD132, CD134, CD137, CD152, CD154, CD158a, CD161 to CD163, CD165, ICAM-1, LFA-1, LFA-3, CTLA-4, B7, hB7-PR1, BSL2vc, BSL3, ICOS, PD-1, and HLA antigens.

41. (previously presented) The expression cassette of claim 36, in which the receptor expressed by a B or a T cells is selected from the group consisting of CD2 to CD10, CD11a, CD11b, CD14, CD15s, CD16, CD17, CD18 to CD21, CD25, CD27 to CD32, CD38 to CD40, CD41A, CD41b, CD44, CD45, CD45RA, CD47, CD49b, d, e and f, CD56, CD58,

CD59, CD61, CD63, CD64, CD69, CD74, CD78, CD79b, CD80, CD81, CD83, CD86, CD87, CD89, CD90, CD92, CD93, CD95, CD97, CD98, CD100, CD101, CD122, CD128, CD130, CD132, CD134, CD137, CD152, CD154, CD158a, CD161 to CD163, CD165, ICAM-1, LFA-1, LFA-3, CTLA-4, B7, hB7-PR1, BSL2vc, BSL3, ICOS, PD-1, and HLA antigens.

42. (previously presented) The expression cassette of claim 38, in which the receptor expressed by a B or a T cells is selected from the group consisting of CD2 to CD10, CD11a, CD11b, CD14, CD15s, CD16, CD17, CD18 to CD21, CD25, CD27 to CD32, CD38 to CD40, CD41A, CD41b, CD44, CD45, CD45RA, CD47, CD49b, d, e and f, CD56, CD58, CD59, CD61, CD63, CD64, CD69, CD74, CD78, CD79b, CD80, CD81, CD83, CD86, CD87, CD89, CD90, CD92, CD93, CD95, CD97, CD98, CD100, CD101, CD122, CD128, CD130, CD132, CD134, CD137, CD152, CD154, CD158a, CD161 to CD163, CD165, ICAM-1, LFA-1, LFA-3, CTLA-4, B7, hB7-PR1, BSL2vc, BSL3, ICOS, PD-1, and HLA antigens.

43. (previously presented) The expression cassette of claim 37, in which the receptor expressed by a B or a T cell is CD4.

44. (previously presented) The expression cassette of claim 37, in which the at least one angiogenesis factor is vascular endothelial growth factor.

45. (previously presented) The expression cassette of claim 43, in which the at least one angiogenesis factor is vascular endothelial growth factor.

46. (currently amended) A vector comprising the expression cassette of any one of claims ~~34-45~~ 34-39 and 53-58.

47. (withdrawn-currently amended) A mammalian cell comprising the expression cassette of any one of claims ~~34-45~~ 34-37, 53-56 and 58 and exhibiting the electrophysiological properties similar to those of a ventricular cardiomyocyte.

48. (withdrawn - previously presented) The mammalian cell of claim 47, wherein the electrophysiological property is a membrane potential of approximately -70 mV, an action potential length of approximately 118 ms and a potential overshoot of approximately 34 mV.

49. (withdrawn) The mammalian cell of claim 47, which further exhibits the property that the cell expresses a muscarinic receptor and that antagonism of said muscarinic receptor by carbachol produces no effect on the membrane potential or length of the action potential.

50. **(previously presented)** A method for genetic alteration of pluripotent precursor cells of a mammal comprising transforming said pluripotent precursor cells *in vitro* with the expression cassette of claim 34 thereby obtaining a cell exhibiting the electrophysiological properties similar to those of a ventricular cardiomyocyte.

51. **(previously presented)** The method of claim 50, in which the cell exhibits the electrophysiological property of a membrane potential of approximately -70 mV, an action potential length of approximately 118 ms and a potential overshoot of approximately 34 mV.

52. **(previously presented)** The method of claim 51, in which the cell further exhibits the property that the cell expresses a muscarinic receptor and that antagonism of said muscarinic receptor by carbachol produces no effect on the membrane potential or length of the action potential.

53. **(new)** An expression cassette comprising at least one polynucleotide selected from the group consisting of:

A) a polynucleotide comprising a cardiac tissue-specific promoter operatively linked to a polynucleotide comprising a

polynucleotide encoding extracellular and transmembrane domains of a receptor expressed by a B or a T cell; and

B) a polynucleotide comprising a constitutive enhancer operatively linked to a cardiac tissue-specific promoter to obtain a promoter-enhancer, said promoter-enhancer being operatively linked to a polynucleotide comprising a polynucleotide encoding extracellular and transmembrane domains of a receptor expressed by a B or a T cell.

54. (new) The expression cassette of claim 53, that further comprises, ii) a promoter operatively linked to a polynucleotide encoding a secreted immunosuppressive protein.

55. (new) The expression cassette of claim 53, that further comprises ii) a polynucleotide comprising a promoter operable in a mammalian ES cell or primordial cell operatively linked to a polynucleotide encoding a protein that provides a selectable or screenable marker gene.

56. (new) The expression cassette of claim 53, that further comprises ii) a polynucleotide comprising a promoter that is operative in a mammalian embryonic stem cell or primordial cell, operatively linked to a polynucleotide encoding a protein that provides a selectable or screenable marker gene, said operatively

linked polynucleotides (ii) being flanked by a pair of LoxP sequences.

57. (new) The expression cassette of claim 53, in which the polynucleotide comprising a polynucleotide encoding extracellular and transmembrane domains of a receptor expressed by a B or a T cell further comprises at least one IRES operatively linked to at least one polynucleotide encoding an angiogenesis factor.

58. (new) The expression cassette of claim 53, in which the receptor expressed by a B or a T cell is selected from the group consisting of CD2 to CD10, CD11a, CD11b, CD14, CD15s, CD16, CD17, CD18 to CD21, CD25, CD27 to CD32, CD38 to CD40, CD41A, CD41b, CD44, CD45, CD45RA, CD47, CD49b, d, e and f, CD56, CD58, CD59, CD61, CD63, CD64, CD69, CD74, CD78, CD79b, CD80, CD81, CD83, CD86, CD87, CD89, CD90, CD92, CD93, CD95, CD97, CD98, CD100, CD101, CD122, CD128, CD130, CD132, CD134, CD137, CD152, CD154, CD158a, CD161 to CD163, CD165, ICAM-1, LFA-1, LFA-3, CTLA-4, B7, hB7-PR1, BSL2vc, BSL3, ICOS, PD-1, and HLA antigens.

59. (new) The expression cassette of claim 54, in which the receptor expressed by a B or a T cell is a CD4 antigen.